

In re Application of Bennett et al.  
Serial No. 10/732,771

### REMARKS

The Office action has been carefully considered. The Office action rejected claims 1 and 9-11 under 35 U.S.C. § 102(a) as being anticipated by the Background of the Invention in the present patent application ("Background"). Further, the Office action rejected claims 2-8 under 35 U.S.C. § 103(a) as being unpatentable over the Background in view of *The Art of Computer Programming* by Knuth ("Knuth"). Finally, the Office action rejected claim 6 35 U.S.C. § 112, second paragraph for an antecedent problem. Claim 6 has been amended to obviate the §112 rejections. Regarding the other rejections, applicants respectfully disagree.

By present amendment, claim 6 has been amended for clarification and not in view of the prior art. Applicants submit that the claims as filed were patentable over the prior art of record, and that the amendments herein are for purposes of clarifying the claims and/or for expediting allowance of the claims and not for reasons related to patentability. Reconsideration is respectfully requested.

Prior to discussing reasons why applicants believe that the claims in this application are clearly allowable in view of the teachings of the cited and applied references, a brief description of the present invention is presented.

The present invention is directed to a method and system and accompanying data structure for the improved attaching of additional information onto words in a trie. As is known in the art, a trie is a tree for storing strings in as a set of nodes. The present invention is generally accomplished by providing a framework within the trie data structure capable of storing multiple tags with individual words, wherein some or all of the tags may further have associated

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values, and/or by separately enumerating some or all the subsets of tagged words (partial enumeration) in the trie, independent of whether global enumeration of all words is in use. To accomplish multiple tagging, the single tag bit on the last node of a word may be interpreted in a new way, as specified by information placed in a header of the trie. If set, it indicates that a further block of bits (e.g., a byte) is included in the node, which comprises a bitmask specifying which of a plurality of tags are set on that particular node. Header information may also specify which (if any) of the tags have associated values, which are then stored in association with each node having such a tag.

Note that the above description is for example and informational purposes only, and should not be used to interpret the claims, which are discussed below.

#### §102 Rejections

Turning to the claims, independent claim 1 recites a computer-implemented method, comprising decompressing a trie, including: 1) evaluating a node of the trie, 2) determining that the node includes a tag flag having a setting indicative of a multiple tag field attached to the node, and 3) evaluating each setting in the multiple tag field, and for each setting that indicates a tag, associating the node with a category corresponding to that tag.

The Office action rejected claim 1 as being anticipated by the Background of the present patent application. More specifically, the Office action contends that the Background teaches decompressing a trie, including: 1) evaluating a node of the trie. Page 1, line 22 to page 2, line 10 of the Background is referenced.

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Further, the Office action contends that the Background teaches 2) determining that the node includes a tag flag having a setting indicative of a multiple tag field attached to the node. Page 2, line 7 to page 4, line 9 of the Background is referenced. Further yet, the Office action contends that the Background teaches 3) evaluating each setting in the multiple tag field, and for each setting that indicates a tag, associating the node with a category corresponding to that tag. Page 2, line 7 to page 4, line 9 of the Background is referenced. Applicants respectfully disagree.

The Background describes two different methods for associating information with words that have been used in the past. One method comprises using a tag bit to flag specific words that may need to be flagged among nodes in a trie representing words. Thus, in the example of the Background, a slang word may be flagged using the single tag bit that is associated with the node of the last letter in the word. The Background illustrated the drawbacks of only having a single bit to flag certain nodes as often times words fit into more than one category of association, *e.g.*, a slang word and a proper name. Thus, the first illustrated prior art solution in the Background cannot be used to associate a node more than once as the single flag bit is either set (associated) or not set (not associated).

Likewise, the Background goes on to describe another wholly unrelated solution known in the prior art of using an enumeration count to associate nodes together. As such, nodes that are the last letter of words in a trie may be associated with a single number that corresponds to an entry in a trie map. The entry in the map may then be associated with other entries in the map. Thus, in the example of the Background, a word may have a last letter with a node

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associated with the number 957. The number 957 is an entry in the map that is associated with other numbers, (2040, 902 and 457) that may represent synonyms or other related words. Thus, the word "miscreant" (957 is associated with the "t" node) may be mapped to other synonyms, such as a "toadie" (2040 is associated with the "e" node), a "lackie" (902 is associated with the "e" node), and a "sycophant" (457 is associated with the "t" node). This association still remains, however, one-dimensional as only synonyms may be associated. Antonyms, for example, cannot be associated because there is only a single mapping to the word to begin with, *i.e.*, 957 only points to synonyms 2040, 902 and 457.

In contrast, claim 1 recites determining that the node includes a tag flag having a setting indicative of a multiple tag field attached to the node. That is, the method of claim 1 may have a multiple tag field that comprises more than one association such as an association with synonyms as well as a separate association with antonyms. The Office action contends that one method of using a tag flag and another method of using an enumeration count constitutes knowing how to determine that the node includes a tag flag having a setting indicative of a multiple tag field attached to the node. This is simply flawed logic. Not only does the disclosure in the background not teach a multiple tag field, but disclosing a tag flag method and an enumerated count method still would not teach the combination of a tag flag method and an enumerated count method.

Knowing how to flag tags and knowing how to enumerate a list does not teach a method of flagging tags to indicate a multiple field tag is associated with the word. Furthermore, claim 1 recites evaluating each setting in the multiple tag

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field, and for each setting that indicates a tag, associating the node with a category corresponding to that tag. That is, a word may be associated simultaneously with several different categories of words, such as being a slang term and a proper name. The Background discloses two different ways of associating a word with a single category, either with a tag flag set or with an enumerated list that associates words based on a single similarity. Disclosing two different ways to associate a word in a singular manner does not teach associating a word with multiple categories. For at least the foregoing reasons, applicants submit that claim 1 is allowable over the prior art of record.

Applicants respectfully submit that dependent claims 9-11, by similar analysis, are allowable. Each of these claims depends either directly or indirectly from claim 1 and consequently includes the recitations of independent claim 1. As discussed above, the Background simply does not disclose the recitations of claim 1 and therefore these claims are also allowable over the prior art of record. In addition to the recitations of claim 1 noted above, each of these dependent claims includes additional patentable elements.

### §103 Rejections

The Office action rejected dependent claims 2-8 under 35 U.S.C. § 103(a). More specifically, the Office action rejected claims 2-8 as being unpatentable over the Background in view of Knuth.

Each of these dependent claims depends from independent claim 1 which has been addressed previously with respect to the respective §102 rejections. As

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was argued above, the recitations of claim 1 are simply not taught by the respective references cited, (*i.e.*, the Background does not teach the subject matter of claim 1). As such, the combination of these references with other references cannot possibly be construed to teach or even suggest the recitations of the various dependent claims. Furthermore, the combination of the Background with Knuth as cited in the §103 rejections, also fails to teach or even suggest the recitations of the respective rejected dependent claims cited by the Office action. Simply put, the prior art of record, whether considered as individual references or in any permissible combination with each other, still fails to teach or suggest the recitations of claims 2-8.

For example, claim 4 recites evaluating information in a header of the trie to determine a size of the bitmask. The Office action contends that this is nothing more than commonly known programming standards at the time by reference to the Knuth disclosure. Simply showing that using bitmasks and headers are well-known in the art does not rise to the level of proper motivation to combine teachings as is required to establish a *prima facie* case for obviousness. To suggest so would be to preclude just about all inventions having anything to do with common programming knowledge, common mathematical knowledge, common physics knowledge, *etc.* Even if known, programming tenets cannot be used in and of themselves as preclusion for patentability of novel and non-obvious applications of such programming tenets. Applicants submit that these claims are allowable over the prior art of record.

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For at least these additional reasons, applicants submit that all the claims are patentable over the prior art of record. Reconsideration and withdrawal of the rejections in the Office action is respectfully requested and early allowance of this application is earnestly solicited.

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### CONCLUSION

In view of the foregoing remarks, it is respectfully submitted that claims 1-11 are patentable over the prior art of record, and that the application is in good and proper form for allowance. A favorable action on the part of the Examiner is earnestly solicited.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney at (425) 836-3030.

Respectfully submitted,



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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this Response, along with transmittal, petition for extension of time, credit card payment form, and facsimile cover sheet, are being transmitted by facsimile to the United States Patent and Trademark Office in accordance with 37 C.F.R. 1.6(d) on the date shown below:

Date: October 11, 2005

  
Albert S. Michalik

1761 Amendment